Hygienic Noise Control Best Practice

Innovative and low cost noise control "best practice" for industries and applications where hygiene, access and maintenance are key issues …

- **Pharmaceuticals**
- **Confectionery**
- **Electronics**
- **Tobacco**
- **Food**
- **Drinks industry …**

The Benefits

- **No hygiene problems**
- **No maintenance issues**
- **No access problems**
- **Retro-fit**
- **Improved productivity**
- **Low cost …**

The Technology - Self Financing Noise Control…

Our approach is based on engineering source control solutions that side-step the problems associated with conventional noise control techniques that involve materials (foam, fibreglass, rockwool) and constructions (enclosures and screens) that are unacceptable where high standards of hygiene must be met. They also substantially reduce costs, sometimes by as much as an order of magnitude - even to the extent that they pay for themselves via increased productivity and savings on the cost of PPE and audiometry in areas that can be de-regulated as noise levels are brought below 85dB(A).

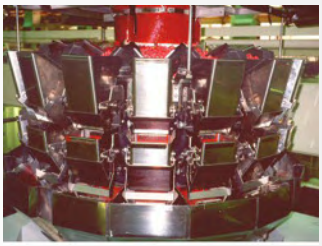
We have invested heavily in diagnostic techniques and the development of new techniques specifically for hygienic applications. We have also worked with suppliers to develop hygienic versions of materials and solutions that can be implemented quickly and painlessly - often as an extension to a standard maintenance schedule - and with very little down-time.

The Case Studies

Weighing Machines

Weighing machines often generate noise levels of 90 - 100dB(A). The conventional approach is to fit partial or full enclosures round each machine. These often produce a noise reduction of only c5dB(A) at a cost of the order of £8k - £15k per machine - and with the associated access and cleaning problems.

We have developed innovative source control techniques that typically reduce noise levels by 10 - 12dB(A) with no effect on normal operation, hygiene or access - and at a small fraction of the cost of enclosure. In many cases, it is actiually possible to remove existing enclosures. Successful applications range from confectionery to meat product processing.



Sound: before after

Scrap Can Extract and Chopper Fans

Sound: before after

Three new can extract systems caused serious occupational and environmental noise problems. The conventional proposal was to spend a fortune on enclosures, lagging and silencers (the latter was particularly difficult as the cans pass through the fans). Our alternative was to design internal fan modifications that reduced the overall noise by 22dB(A), eliminating both the occupational and environmental noise problems with no effect on system performance and at only 10% of the proposed cost.

Vibratory Graders, Feeders, Separators, Conveyors…

Our techniques typically provide 5 - 27dB noise reductions without enclosure and with capital cost savings of 50% - 90% compared with conventional methods. In many cases, the modifications are actually profitable as they improve performance and reduce maintenance. For example: doubling throughput of vibratory grader; eliminating fatigue fractures and hence down-time on vibratory hoppers; new design of enrober vibrator, improving quality and reducing chocolate use by 10%….

What are your Noise Control Options?

Can you eliminate PPE and health surveillance?

The new regulations require a seismic shift in attitude to noise. Quoting HSE guidance - "***these regulations are concerned with controlling noise, not measuring it…***". Companies must now quantify the noise control options rather than just repeating risk assessments and PPE cannot be used for long term risk management unless you can prove that noise control is impractical.

The most effective approach is a **Noise Control Audit**, which saves you the cost of repeat risk assessments. This generates a cost / benefit list of the noise control options for a machine or whole site using the best of current technology. The audit provides the basis for planning the most practical and cost effective noise control programme - and certification where noise control is not practical so that PPE can be used long-term. **Call for information.**

hygienic noise control

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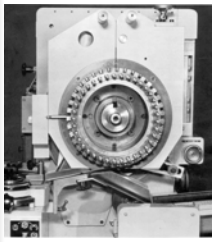
The Case Studies ... continued

Die Headers

The noise from die header machines used to manufacture hard sweets and other products is often 95 - 101dB(A). The conventional approach is to fit them with high cost acoustic enclosures that cause serious access problems and also makes cleaning very difficult.



Our solution was based on a precise diagnosis of the source of the noise. This allowed us to more than halve the noise by developing a re-designed cam - which also extended the life of the cam significantly, reducing costs. Coupled with hygienic close shields, we can usually reduce noise levels to below 90dB(A).

Air Transport Fans

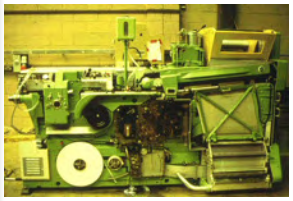
Centrifugal air transport system fans used to distribute pharmaceutical products generated 95 - 100dB(A), dominated by a highly irritating tone at 380Hz.

The strict hygiene requirements ruled out conventional silencers - which left the option of replacing the fans with larger, slower units and re-designing the transport system at very high cost.

Our alternative was to fit our Quiet Fan technology (QFt) inserts inside the fan casings at a cost of the order of £100/fan. These reduced the tonal content by close to 20dB cutting general noise levels by 10 - 15dB(A). There are no hygiene implications and the performance will be unchanged for the life of the fans without maintenance.

Cigarette Making Machines

These making machines had operator noise levels of 91 - 93dB(A) and had production requirements for instant access in the event of problems. Moreover, conventional acoustic materials were ruled-out due to the toxic combustion products should traces find their way into the tobacco



Various costly covers and guards had been tried and rejected due to productivity and performance limitations. An entire production area had been lined with acoustic absorbent at a cost of £250000 - but with no effect on operator noise levels.

We designed a retro-fit engineering noise control kit that controlled pneumatic noise, de-tuned gearbox resonances and damped key panels. Coupled with tolerance control on one gear-pair, this reduced noise levels by 4dB(A) to well below 90dB(A) at a cost of a few hundred pounds/machine and with no effect on normal operation or access. The kit was licensed by Molins for worldwide sale as a profitable product in its own right.

Hi-Tech, High Hygiene Acoustic Materials

We have considerable expertise re the performance and properties of acoustic materials that can be used in high hygiene applications. Most companies are not aware of some of the new materials now available that can be used - even for applications where there are very strict hygiene requirements.

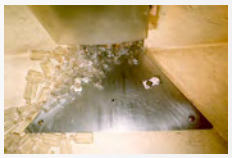
The two materials that have had most impact on our work as independent noise control engineers are laminated sound dead steel (looks like stainless steel but sounds like rubber - www.sounddeadsteel.com) and very high hygiene acoustic absorbent (steam cleanable - can even be used in clean rooms - www.ecophon.co.uk).

Photo - Ecophon Bottling hall

These materials provide us with a couple of very useful additions to our armoury as we provide the next generation of best practice noise control techniques.

Vibratory Hoppers

The noise from dozens of vibratory feed hoppers in a pharmaceutical plant generating 95 - 99dB(A) was reduced by 22dB by designing retro-fit modifications to the geometry and introducing sophisticated damping. There were also other benefits as the modifications substantially improved product feed and eliminated persistent fatigue cracking.



The cost was not only a small fraction of the c £100000 required to fit conventional enclosures, and with no effect on normal operation or access - plus productivity was actually significantly improved.

Buy Quiet Purchasing Policy

Don't let your suppliers waste your money on noise control that is not best practice.

An effective purchasing standard can save enormous sums of money by ensuring that suppliers use the best of current noise control technology to meet specifications. Partnering with us ensures that you get the best and most cost effective solutions from your suppliers.

We have developed the de-facto UK standard purchasing policy with template documentation guidance notes, technical support and training.

On the Web

Check our web site for news about the latest developments in occupational and environmental Noise, Vibration, HAV, noise control case studies (including sound), training, new products ....

www.invc.co.uk

Contact us for more information about hygienic noise and vibration control technology, technical support, purchasing and training.

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